

II International Congress of Silviculture  
Workshop “Future-oriented integrated management of European forest  
landscapes”  
The INTEGRAL project: main research findings in Italy  
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## Socio-economic barriers and drivers of integrated forest management



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**TESAF**



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## Outline

1. Background: scenario development in the Integral project
2. Ongoing structural changes affecting the forest economy  
4 trends + 2 general features
3. Italian forestry sector in the bio-based economy

Slides can be downloaded from the web: search “pettenella”



## Steps of the project

- Selection of **3 case study** areas
- **Data collection**, stakeholders' consultation, model implementation
- Long-term **scenarios definition** (for each study area)
- **Selection of the preferred scenario** (← focus group with expert with different background)
- Gap analysis → policy roadmap (what to do to reach the preferred scenario): “**backcasting**”
- **Discussion** with the stakeholders
- **Input to policy makers**

## Scenario definition

### An example for the Asiago plateau:

- 1<sup>st</sup> **Scenario:** business as usual
- 2<sup>nd</sup> **Scenario:** bioenergy specialization + PES in areas of high environmental values
- 3<sup>rd</sup> **Scenario:** mixed industrial roundwood and bioenergy
- 4<sup>th</sup> **Scenario:** tree silviculture (high quality timber) + bioenergy + PES
- 5<sup>th</sup> **Scenario:** abandonment (wilderness?), no productive function



## 4 trends

- A. Reduced consumption of **pulp and paper**
- B. Development of the **bio-energy** segment
- C. Growing role of forest **plantations** in wood supply
- D. Increasing importance (and recognition) of **NWFP and services**

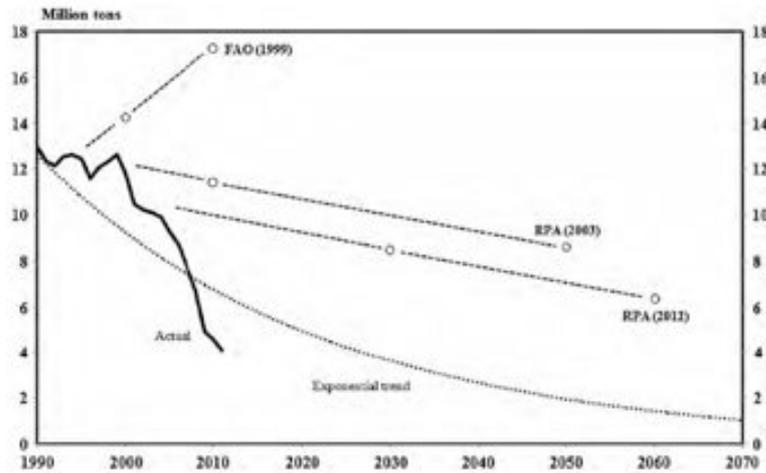
... under two general features of the market:

- a. **Company consolidation**
- b. **Structural instability**

## A. Reduced consumption of pulp and paper (EU market)

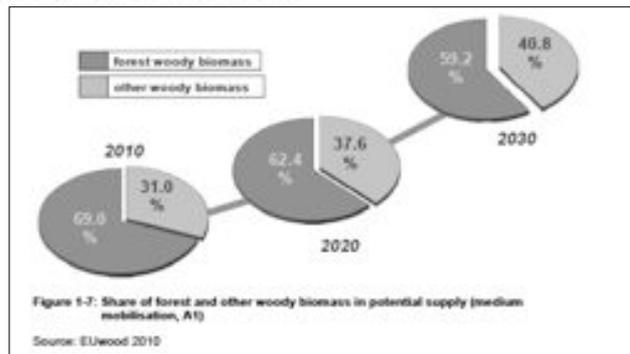
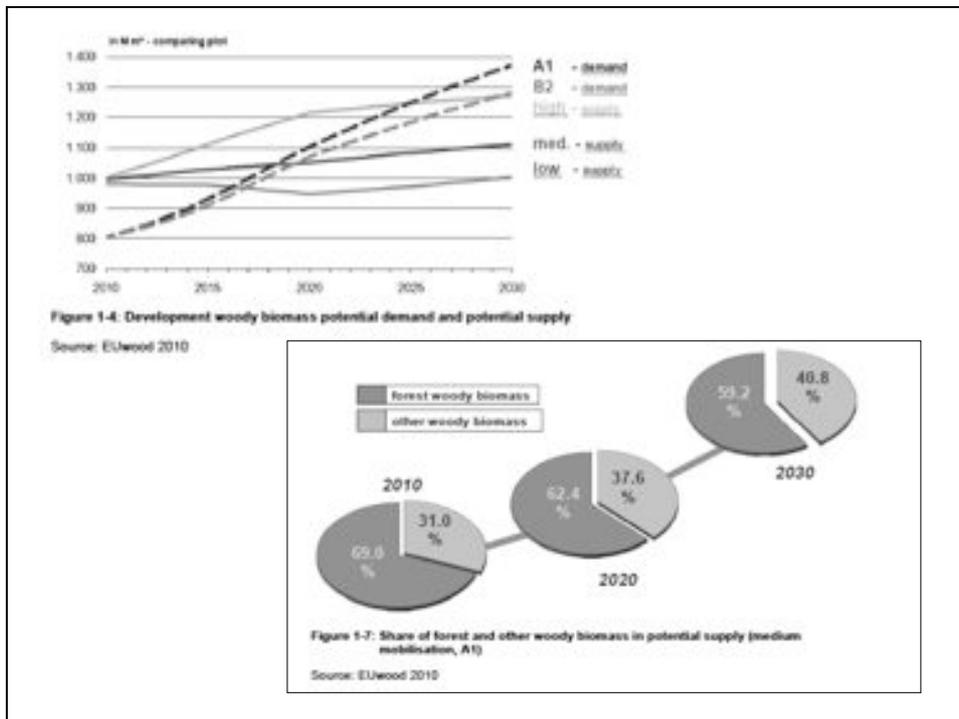


### Reduced consumption of newsprint (US market)



## B. Development of the bio-energy segment





## Opposite views



Recent studies (EUwood, 2010) have suggested that the EU's forest biomass supply would increase by 11% from 2010 to 2030. However, assuming the EU's 2020 climate and energy targets, and the continuation of forest products markets along past trends, this study also estimated that the demand for forest biomass would increase by 73%. This would mean a shortage or a "gap" of 316 million m<sup>3</sup> of forest biomass in 2030.

Key message: we will face a problem of scarcity

- However we do have to consider:
- The reduced demand for industrial wood
  - The role of trade (import from outside EU)
  - The role of prices (higher demand → higher prices → higher supply)



Market distortion by public interventions.

An interesting example

Un testigo del creciente envío de biomasa a Italia es el puerto de Palamós. De allí parten la mayoría de barcos cargados con

The screenshot shows a news article from EL PAÍS CATALUÑA. The main headline is "Italia compra los bosques quemados" (Italy buys burnt forests). A sub-headline reads "Empordà para producir electricidad" (Empordà to produce electricity). The article includes a photograph of a large pile of wood chips being loaded by a tractor. A map of the Iberian Peninsula highlights the Empordà region in northeastern Spain and the port of Palamós. The article text, partially visible, discusses the export of wood chips to Italy for biomass energy production. The URL at the bottom is <http://ccaa.elpais.com/ccaa/2014/03/08/catala>.

Unfair competition between the bioenergy and the panel industry sectors

**NON BRUCLAMO IL MADE IN ITALY**

Mercoledì 1 ottobre 2014, ore 10:00 | Hotel & Conference Center Nazionale, ROMA - Piazza Montecitorio 131

Gentile Davide Pettenella, con la presente siamo ad invitarla all'evento "Non Bruciamo il Made in Italy", che si terrà mercoledì 1 ottobre alle ore 10:00 presso l'Hotel & Conference Center Nazionale di ROMA - Piazza Montecitorio, 131.

L'obiettivo dell'evento è far emergere la consapevolezza in tutti gli attori economici e istituzionali, compreso il consumatore finale, del **valore per l'Italia dell'industria del legno**, di tutta la sua filiera, compreso il riciclo dei residui.

Il confronto vedrà la presenza dei maggiori protagonisti dell'industria del riciclo del legno, del **Ministro dell'Ambiente Gian Luca Gallietti** e del **Presidente della Commissione Ambiente della Camera dei Deputati, Ermete Realacci**.

### SUSTAIN NATURE

## DID YOU KNOW ?

- For every tonne of wood, wood products provide 54 man hours of work while energy generation only provides 2 man hours.
- The wood industry generates €1044 for the European economy for each tonne of dry wood it processes. By comparison, burning a tonne of wood to generate energy only contributes €118.
- The wood sector creates 25 times more employment, 10 times more added value and offers better job security than the biomass production.

The world is seeing the EU... In 2009 and 2010... The furniture... The EU... and...

**Wood panel industry is essential in the value chain of wood**

The world furniture production is worth about €260 billion, for which Europe accounts for 30%. The furniture industry remains by far the largest end-user market for the particleboard in the EU. The EU furniture sector is worth €130 billion and it is growing 1.8% on an annual basis.

**NOTE TO EDITORS:**

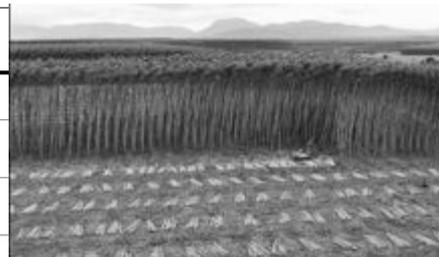
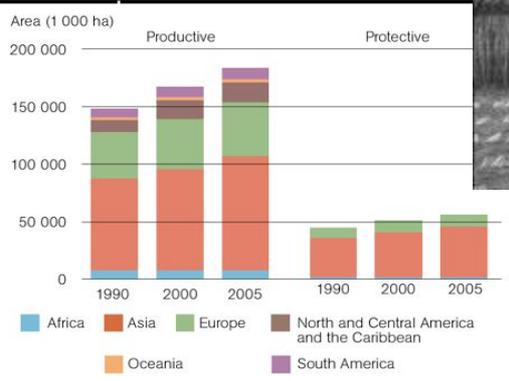
The European Panel Federation (EPF) represents the European manufacturers of particleboards, MDF and OSB from 29 countries. The sector includes more than 180 factories - which are mostly located in rural areas. In 2009 the industry produced 34.6 million m<sup>3</sup> of particleboard, 12.2 million m<sup>3</sup> of MDF and 3.3 million m<sup>3</sup> of OSB, generating a turnover € 25 billion.

### The "cascade approach"

(2013 EU Forest Strategy communication, p. 5-6)

## C. Growing role of plantations

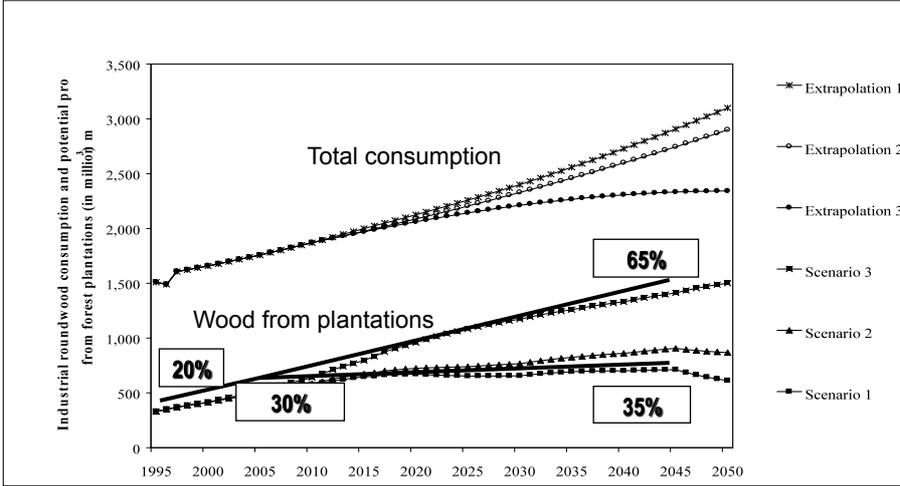
**Planted forests in the world according to management objectives and continent (1990 – 2000 - 2005)**



Fonte: FAO State of the World's Forests 2007

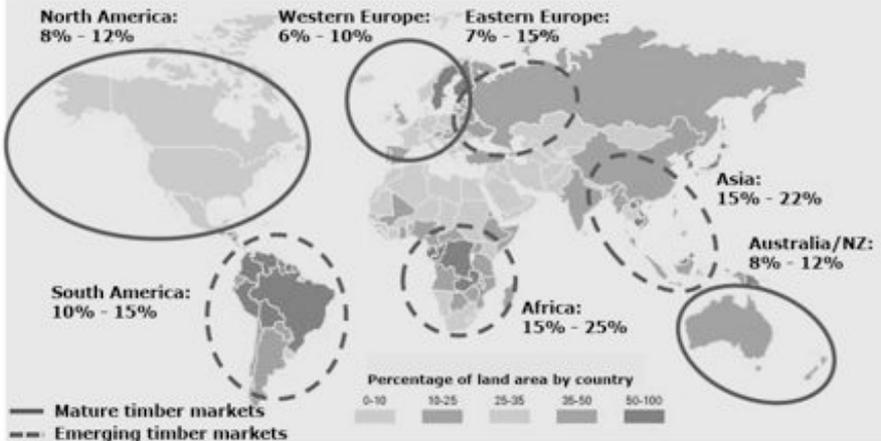
- 230 M ha in 2005
- 75% for production, 25% for protection
- mainly conifers (32% gen. Pinus)

### Forecast of industrial roundwood consumption from forest plantations (Source: FAO)

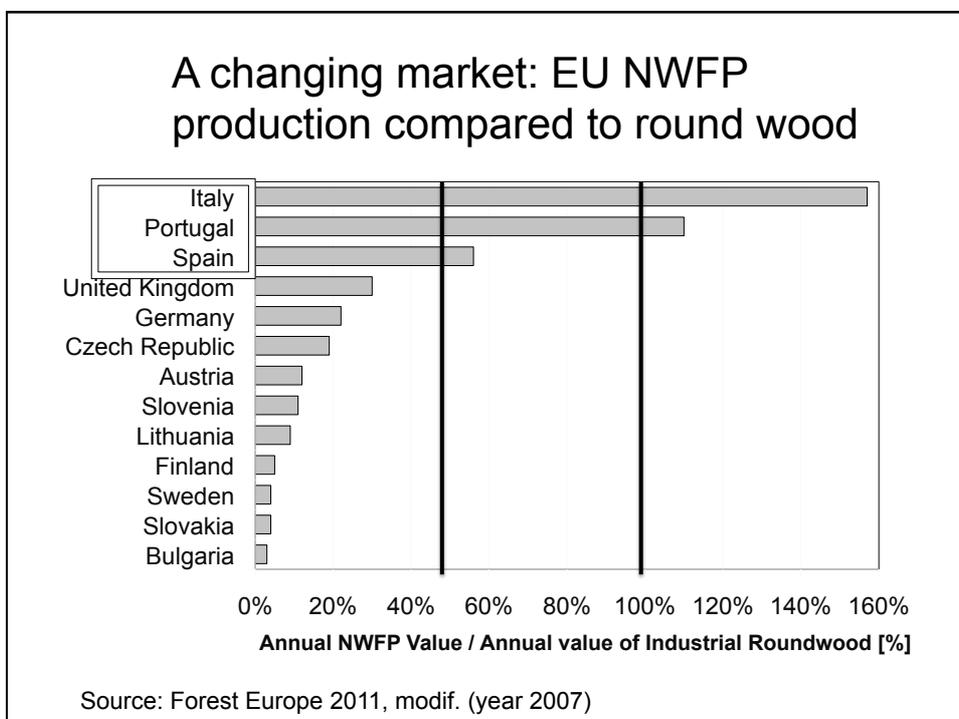
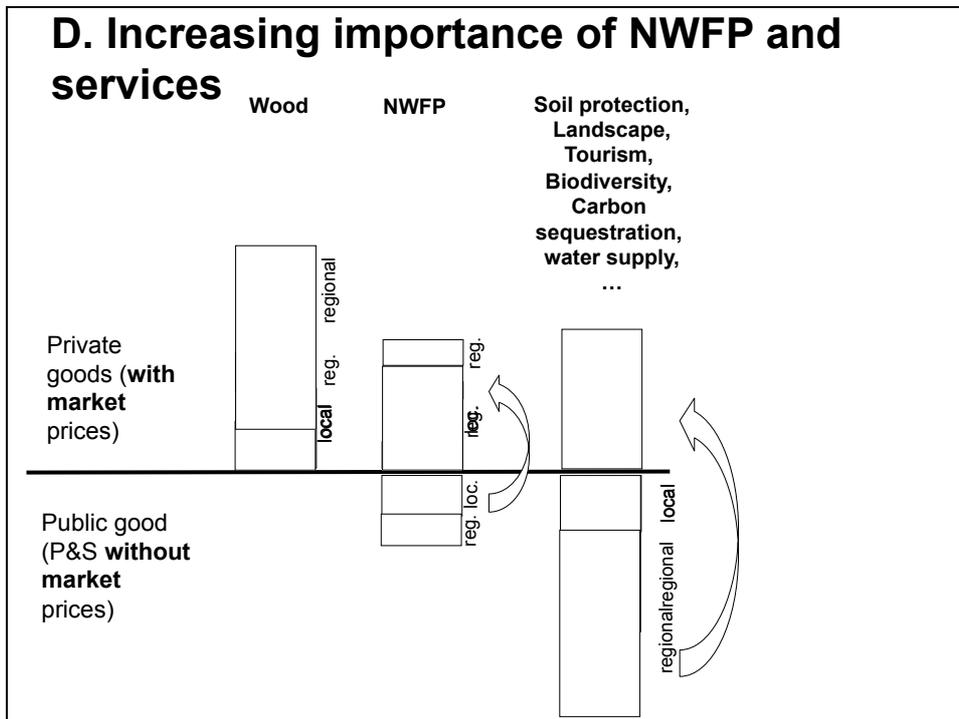


### Global forest regions and expected IRRs\* from forest investments

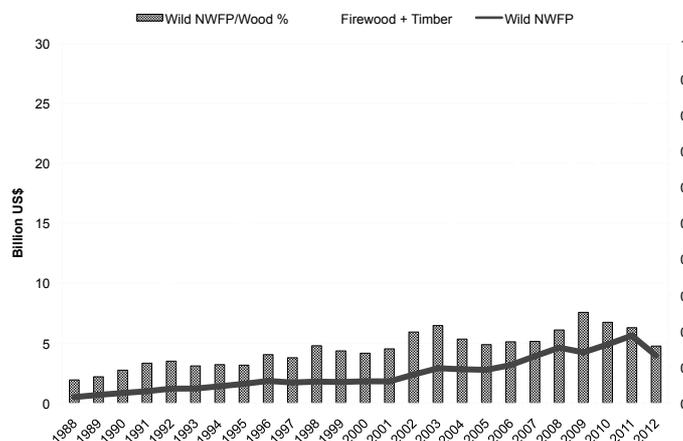
\* Internal Rate of Return



Source: Food and Agriculture Organization of the United Nations: State of the World's Forest 2007, Pöyry Group, First Forest, Hancock Timber Group



### Wood vs. NWFP: general trade overview (raw prod.)



Wood codes: 4401, 4403

NWFP: only wild raw products collected in EU

### Value of the production of some NWFP in the EU

**Pine nuts**



**Cork**



**Pine resin**



Data source
FAO FRA 2010
Alternative Min
Alternative Max

Production (tons)	Value (M €)
16,545	48.7
5,295	83.8
18,992	307.7

Perez et al., 2004; NFC, 2005 and 2012; Mutke et al., 2012 and 2013; Sfeir, 2011; Daly et al., 2012; GDF, 2009.

Production (tons)	Value (M €)
101,428	163.3
142,300	142.3
142,300	327.3

APCOR, 2010; Daly et al., 2012.

Production (tons)	Value (M €)
1,705	0.9
8,343	2.6
9,821	3.2

IGN, 2013; Spanos et al., 2010; NFC, 2007; Cesefor, 2009; Magrama, 2011; GDF, 2009; Satil et al., 2011.

**New (old) products:**

- Pine resin
- Tannin
- Aromatic and medicinal herbs
- Foraging
- ...

**Mushrooms**

<http://www.dallavalle.fi>

**Enterprises: 62 (in 2008)**

- 15 Agritourisms/ Farm businesses
- 12 Hotels/Guest quarters
- 8 Bed&Breakfasts/Inns/Hostels
- 9 Cheese, sausage and wine growing and producing factories
- 2 Didactic farms
- 3 Museums/Private collections
- 30 Restaurants/Porterhouses
- 26 Typical products sellers



## a. Company consolidation: some evidence

Finland: the first next-generation bio-product mill in the world

### Bioproduct mill – more than a traditional pulp mill

- Wood is refined into biomaterials, bioenergy, biochemicals and fertilizers sustainably and with great resource efficiency
- Resource-efficient way of using all production sidestreams
- The mill will not use fossil fuels
- Energy efficiency will be emphasized when choosing equipment and machinery
- Helps Finland to reach its targets for the use of renewable energy



- Metsä Group is planning the biggest investment in the forest industry in Finland (EUR 1.1 billion)
- Annual pulp production: 1.3 million tonnes
- Use of wood: 6.5 million m<sup>3</sup> annually (currently 2.4 million m<sup>3</sup>)
  - Wood mobilisation
- Over 2,500 jobs will be created throughout the value chain, new jobs in harvesting and wood transport
  - Competent workforce

Source: Riiikka Joukio, 2014

## Some evidence: UK



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- Get involved
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- Sustainability Studies
- Contact us

### Woodfuel

Forth Energy proposes to develop three Renewable Energy Plants at the ports of Dundee, Grangemouth and Rosyth. The projects represent a £1.1bn investment in renewable energy and would have a total energy capacity of up to 300MW electricity and 260MW heat. This represents a fundamental change in the way we generate electricity and will place Dundee, Grangemouth and Rosyth at the forefront of helping to achieve the ambitious carbon reduction targets set out in the recent Climate Change (Scotland) Act.

Wood fuel is safe and dependable and provides a source of energy which can be constantly generated. This provides a renewable energy supply which is as reliable as coal and gas but has a significantly lower environmental impact.

The choice to locate the Renewable Energy Plants at the three ports offers an opportunity to deliver large amounts of wood fuel by sea. One typical bulk ship is able to deliver up to 35,000 tonnes of fuel, the equivalent of 1000 lorry loads, allowing renewable energy to be generated whilst minimising the impact on the road network.

In addition, there are existing communities living around the ports in a number of ways;

- Additional investment from new businesses which can be located near energy plants;
- Skills development;
- Locally generated renewable energy; and
- 300-500 construction jobs and 40 operational jobs.

### Environmental Impact Assessments & Consent Applications

Dundee

Grangemouth

Rosyth

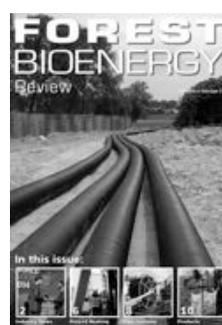
- 1.3 billion € investment
- 300 MWe + 260 MWt
- 40 new jobs (32.5 M€/employee)
- Consumption: 5.3 M ton biomass/yr
- 90% imported (75% from Florida)

<http://www.forthenergy.co.uk/biomass.asp>

In a market of not differentiated products European producers are much exposed to international competition

## GERMAN PELLETS TO BUILD SECOND US PELLET PLANT

Source: [www.forestbioenergyreview.com/pellets](http://www.forestbioenergyreview.com/pellets)



German Pellets is further expanding its production capacity in Louisiana, Germany Pellets will soon begin construction work on a new pellet production facility. The **plant will be about 1 million tonnes of wood pellets per year**. This facility will be the German Pellets Group's second North American site. In April a plant will open for production in Louisiana.

"Once again, we have chosen a site with well-established wood supplies and logistics," said Peter Leibold, manager of the German Pellets Group. Until a few years ago, Louisiana had been an important location for the wood-based pellet industry. The US company Georgia Pacific had produced particleboard and other products at this site. Supply infrastructure and other infrastructure, including a railway siding, are already in place. Construction on the new plant will begin soon.

The decisive factor for the choice of location was the availability of raw materials in this densely forested region, where the annual timber increment is significantly higher than in Germany owing to the subtropical climate.

The forestry industry is the second largest employer in the state of Louisiana. The forests are managed sustainably. The new German Pellets production facility in Louisiana will create some **500 jobs in the region, both directly and indirectly**.

German Pellets will produce one million tonnes of wood pellets per year in Louisiana, twice as much as in its first US plant in Woodville, Texas. "Pellet consumption worldwide is on the rise, especially in Europe. This means that the construction of large production capacities is necessary," said German Pellets CEO Peter Leibold. The demand from the European power plant market for the production of heat and electricity from wood pellets has risen sharply. There is also an increasing demand for wood pellets among private consumers and large-scale users, for example for supplying heat to hospitals, schools, commercial buildings and industrial facilities.

For the transport of wood pellets from the Louisiana and Woodville sites to Europe, German Pellets will be using the harbour of Port Arthur on the Gulf of Mexico. At the deep-water port, German Pellets operates storage and loading systems.

## Production of sawn wood in Europe: a process of consolidation

Companies			Sawmills		
Rank	Company	Production or Capacity [m3/yr]	Rank	Sawmill	Production or Capacity [m3/yr]
1	Stora Enso	5960000	1	Saalburg-Ebersdorf Sawmill	1200000
2	Rheffer Gruppe	2200000	2	Wismar Sawmill	1200000
3	LPM	2020000	3	Somplar Sägewerk	1200000
4	Moshren	1968000	4	Binder Sägewerk	825000
5	Bettenmeier Group	1935000	5	Landsberg Am Lech	825000
6	Ante-holz GmbH	1900000	6	Offner Wolfberg	800000
7	Klausner-Group	1860000	7	Sottleberode Sägewerk	700000
8	Mayer-Melnhof Holz	1830000	8	Sebes Schweighofer	700000
9	SCA	1690000	9	Badauti Schweighofer	700000
10	MetallWood	1487000	10	Koderadorf Klausner Sawmill	660000
11	Setra Group AB	1460000	11	Värdsågen	650000
12	Södra Timber	1400000	12	Leoben	650000

Source: The sawmill database  
[http://www.sawmilldatabase.com/productiontoplist.php?continent\\_id=999](http://www.sawmilldatabase.com/productiontoplist.php?continent_id=999)

## Production of sawn wood in Europe (1,000 m3): concentration in few countries

Rank 2011	Rank 2010	Company	Country	Locations	Output per location	2008	2009	2010	2011	Difference in %	Trend
1	1	Sora Euro Wood Products	FI	23	243	3.900	4.800	5.057	5.100	1	=
2	6	SCA Timber	SE					2.000	2.200	5	=
3	4	Mölners	NO					1.817	1.970	9	=
4	3	Mayer-Möbelf Holz	AT					2.300	1.900	-10	--
5	6	Sotra-Gruppe	SE					1.562	1.830	18	==
6	8	Holzindustrie Pilsch	AT	3	380	1.750	1.500	1.700	1.800	6	=
7	9	UPM-Kymmene	FI	7	247	2.132	1.497	1.729	1.729*	0	=
8	5	Södra Timber	SE	10	170	1.800	1.800	1.700	1.700	0	=
9	10	Kettner-Holding	DE	3	340	1.700	1.380	1.450	1.700	17	==
10	11	Monsiemo-Faustner Holzindustrie	FI	9*	178	1.700	1.500	1.500	1.600	7	=
11	13	Schweighofer	AT	3	750	850	1.100	1.400	1.500	7	=
11	-	Tim Timber Industry	RU	2*	750	-	-	850	1.500	60	+++
13	12	Klinik Holz AG	DE	3	450	1.800	1.200	1.250	1.350	8	=
14	17	am-holz	DE	2	600	1.170	826	928	1.200	30	==
15	14	Vida	SE	7	157	1.300	1.200	1.000	1.100	10	==
15	15	Holzindustrie Bader	AT	2	350	1.000	950	1.000	1.100	10	==
15	19	BSW Timber	UK	8	118	700	550	690	1.100	11	==
18	15	Ziegler Holzindustrie	DE	1	1000	830	1.000	1.000	1000	0	=
19	20	Karivik Timber	SE	7	136	832	347	414	95	129	+++
20	2	Klausner-Gruppe	DE	2	440	4.100	2.695	2.173	880*	-80	---
		Average value/Sum		134	248	34939	29319	31803	3325	4	==

FI, SE, NO + AT & DE + (RU+UK)

Source: Holzkurier survey <http://www.timber-online.net>

## Some evidence

Scandinavian countries: 3 billion \$ of investments in 2014 in the forest resources based green economy: energy + bio-chemicals



Smetti di seguire Håkan

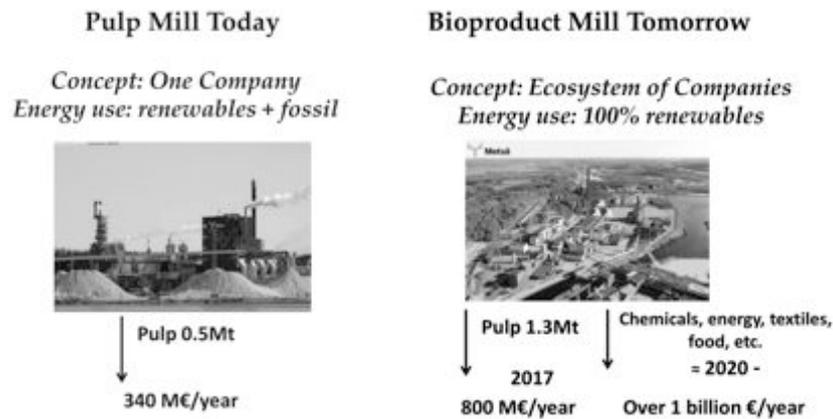
**The revival of the softwood fiber-based forest industry in the Nordic countries has been especially noticeable in 2014; investment plans of three billion dollars in pulp, bio energy and bio materials**

Håkan Ekström  
Wood Prices, Paper & Wood Product Consulting, Forest Resource & Timber Reporting, Owner at Wood Resources International

Forest companies in Northern Europe have announced plans to investment three billion dollars in 2014 in attempt to move beyond mostly producing newsprint and commodity packaging grades. The idea is to diversify their product lines to include new bio-products from wood fiber and to generate bioenergy to reduce the region's dependence on fossil fuels, reports the Wood Resource Quarterly.

[https://www.linkedin.com/groupItem?view=&gid=2554933&type=member&item=5929358887110070274&trk=groups\\_items\\_see\\_more-0-b-11](https://www.linkedin.com/groupItem?view=&gid=2554933&type=member&item=5929358887110070274&trk=groups_items_see_more-0-b-11)

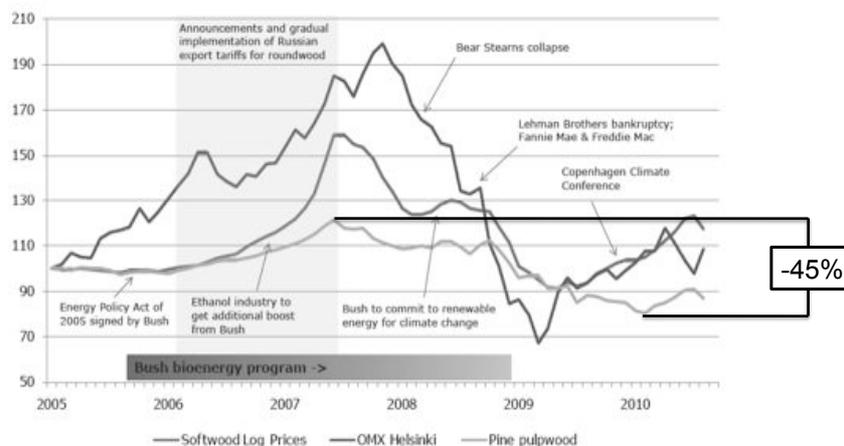
## Example of transformation to bioeconomy



Source: Lauri Hetemäk, Future of European Forest-Based Sector

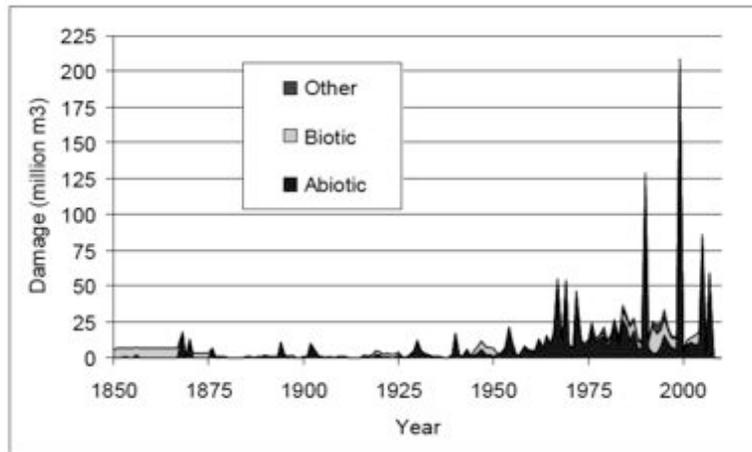
## A general feature of the market: structural instability

A good indicator: wood prices

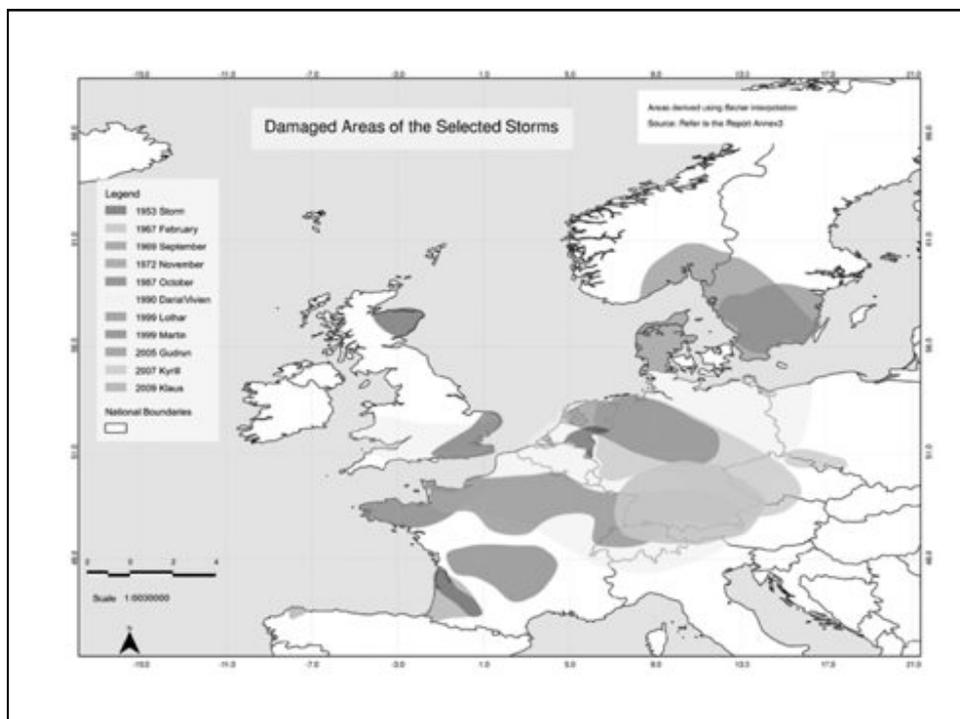


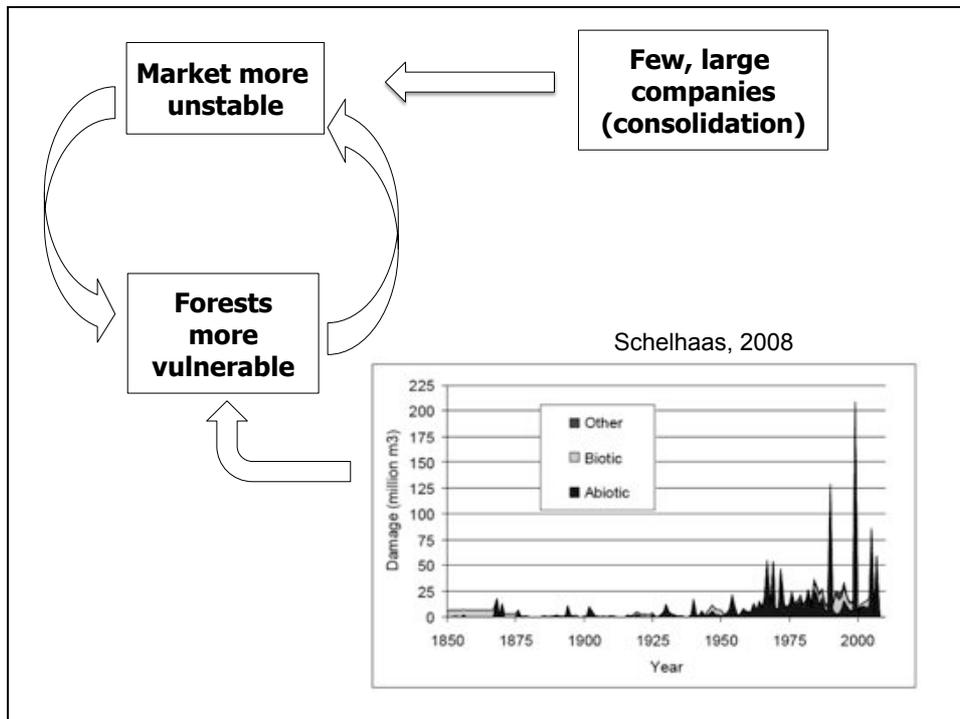
Source: Daos Oy, 2012

Instability not only in the demand (economic crisis) but also in the supply.  
 Main large damage event (storms, fires, insect attacks, ...) to (ageing) European forests



Schelhaas, 2008





### 3. Italian forestry sector in the bio-based economy

The collage illustrates various aspects of the forestry sector: raw timber (logs), a managed forest, a tree trunk showing bark damage, a bird's nest, a wooden walkway in a forest, and a logging machine in operation.

## Bio-based (nature-based or green) economy: two views

**Adaptive strategy** (“Old wine in new bottles”) → conventional wisdom of externality correction (i.e., “getting prices right” giving the true value to resources, reducing the consumption of natural capital; weak sustainability concept; low Carbon economy)

Alternative strategy: “**Strategies for synergies**” (M.Toman, 2012): which consider not only the protection of natural capital, “*but it stresses as well the importance of addressing equity and social inclusion challenges in moving toward a green economy*”.

## The social and political components of the Green economy

“Policy action requires looking across a very wide range of policies, not just explicitly „green” (i.e. environmental) policies.” (OECD 2011, page 18)

(Green economy) “will also involve achieving smooth and just adjustment in labor markets by ensuring that workers have the means to find opportunity in change. **More generally, the success of a green growth strategy will rest on addressing political obstacles and distributional concerns about the costs of change.**” (OECD 2011, page 20)

“The key aim for a transition to a green economy is to eliminate the trade-offs between economic growth and investment and gains in environmental quality and social inclusiveness... the environmental and social goals of a green economy can also generate increases in income, growth, and enhanced well-being” (UNEP 2011, page 16)

## Two views with different impacts on the rural areas: the case of the forest resources

**Adaptive strategy:** focus on forests producing raw materials together with agriculture, fishery, food and biotechnology being the engine of the growth

Technological innovations, large scale investments (→ high risks), diversification in outputs, ...

→Developing Nordic forestry in a value chain perspective (sectoral development – **vertical dimension of bio-economy**) = the Nordic model

**Strategies for synergies:** focus the increasing importance on the social dimension of the forestry economy (from an economy based on commodities to a an economy based on services)

Social innovations, small scale, diversification in the use of inputs, networks, high added value P&S

→Forests as the green infrastructures for the rural development (intesectional development – **horizontal dimension**) = the Med model

## My 2 working hypothesis

1. There are very **limited chances** for Italy to be competitive in the mass market, in the **large scale use of wood for industrial use**
2. The **horizontal approach** is more effective in **supporting value added creation and job expansion** in managing green resources in rural areas than the vertical approach

## The horizontal approach to bio-economy: NWFP, ES (and wood) for local development

- Few statistical data: **limited political visibility**
- A constellation of **niche markets**: diversification as the key-element; **more complex market organization** (cross-sectoral and interlinked P&S)
- **Social innovation (social capital)** much more important than financial and technological capitals
- Products and services to be promoted with **strong investments in technical assistance and innovation services** (exactly the opposite of what is happening in Italy)

Unfortunately in the EU the industrial interests are much more politically relevant than the interests and political strength of the forest owners-managers (small, weak and badly represented)

